

# THE Resource



CORPORATE UPDATE

APPLICATION ENGINEERING

TECHNICAL SUPPORT

RESEARCH &amp; DEVELOPMENT

SALES &amp; MARKETING



## THE ART OF BUILDING SUSTAINABILITY

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## THE ART OF BUILDING SUSTAINABILITY

The Paris Agreement, adopted by 196 parties at COP 21 in Paris in December 2015, committed signing nations to undertake ambitious efforts to combat climate change and adapt to its effects. The goal? Limit global warming to well below 2 degrees Celsius, preferably 1.5, compared to preindustrial levels. To do so, participating countries aim to achieve a climate-neutral world by mid-century.

The Paris Agreement provides a framework for financial, technical, and capacity-building support to countries that need it. At Reliable Controls we're particularly passionate about improving resilience to climate change and reducing greenhouse gas emissions.

In addition to the high level of interaction between HVAC, lighting, and security systems, building sustainability demands other technological and supporting elements that will endure over the long term. In 2019 we began promoting a concept called the Art of Building Sustainability—nine elements to help guide building owners and operators to create true building sustainability—now and into the future.



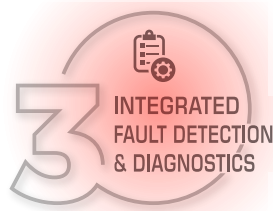
### Certified open standards

Open protocols certified by third-party testing labs ensure different vendors effectively share information and services—to interoperate as a single, dependable system. Since 1995 the BACnet protocol has delivered the promise of interoperability for building owners around the world. All controllers that Reliable Controls manufactures are certified by a third-party testing lab—BACnet Testing Laboratories. When customers see the BTL mark on our products, they can be confident the products have been rigorously tested to meet a very high level of quality and open-protocol conformance.



### Secure data

Perhaps more important than ever in our industry is the need for improved information security and scalable network infrastructure. Integrating building controls from multiple vendors can introduce security vulnerabilities. Reliable Controls RC-WebView® software supports a single sign-on architecture and RC-RemoteAccess® software provides secure communication through a BACnet Secure Network. These two software products help to deliver a comprehensive approach to security—no matter how many different BACnet devices are deployed.



### Integrated fault detection and diagnostics

Reliable Controls integrates real-time fault detection and diagnostics capabilities into its products, saving building owners and operators the time and money involved in implementing third-party reporting. Using existing infrastructure, our live fault-reporting technology empowers building operators to diagnose and resolve issues as they happen—so their facilities run smoothly and efficiently, reducing unexpected downtime and extending the life of their equipment.



## Ownership of analytics

Facility owners, operators, and managers can effectively optimize building performance with timely access to actionable insights. Reliable Controls products allow stakeholders full control over data gathering, formatting, and delivery without the burden of restricted licensing or copyright requirements—so they can quickly turn information into action while retaining full ownership and control of data.



## Single-app experience

Today's building occupants expect to interact with their environment to control lighting, ventilation, heating, cooling, and air quality. Empowering people to manage their own surroundings fosters accountability and efficiency. With technology from Reliable Controls, building occupants can use their mobile devices to better connect with their space and take control of their environment in a holistic, single-app experience.



## Minimal waste

Today's technology is often paired with a cavalier attitude about product life cycle. Vendors like Reliable Controls who are committed to sustainability understand that carefully engineered designs and meticulous component selection result in devices that endure for the long term. Reliable Controls provides comprehensive repair and responsible disposal services that extend a customers' return on investment and minimize waste—even if the products have been in the field for decades.



## Backward compatible

The way manufacturers respond to new technologies highlights a fundamental challenge in the building controls industry: planned obsolescence. For decades, Reliable Controls has countered this challenge with an ongoing commitment to backward compatibility. When we develop new products and improve existing ones, customers can be confident in a smooth transition to new technologies—without the need for third-party gateways or expensive hardware replacement.



## Training and support

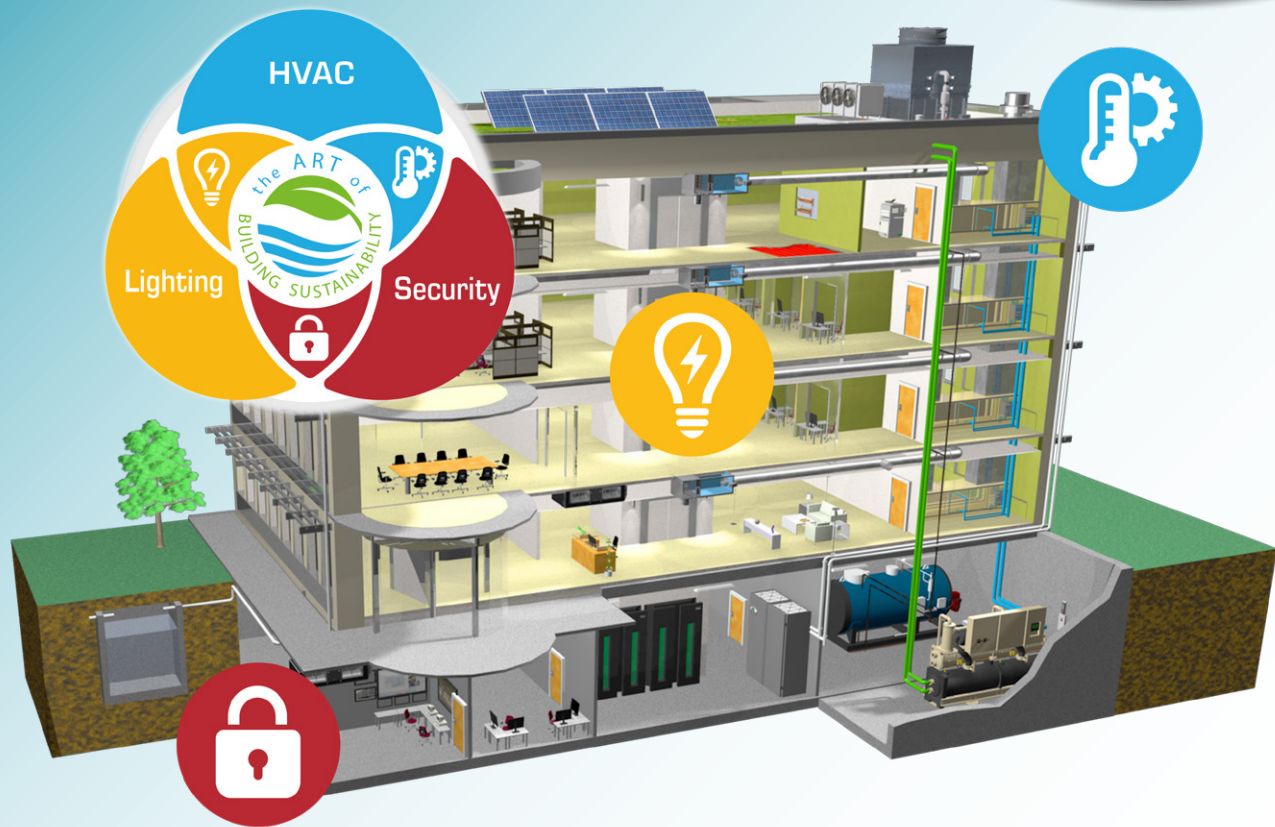
With more than 30 years in the building controls industry, Reliable Controls is ideally positioned to deliver comprehensive technical services to stakeholders. Our online support centers provide access to dealer and operator certification training, engineering specifications, software manuals, hardware user guides, troubleshooting tools, and more.



## Factory-certified service

Reliable Controls technology is supported by you—our global network of knowledgeable, factory-certified Authorized Dealers. Your company invests in skilled professionals and understands the critical factors to be successful in your local markets. Building operators and owners know the importance of local factory-certified service that delivers consistent, high-quality support and expertise demanded in today's built environment.

# THE Resource



*The integration of HVAC, lighting, and security systems is the foundation of the Art of Building Sustainability.*

Reducing greenhouse gas emissions from the world's building sector is an important objective we must achieve to meet our climate commitment. Approximately two-thirds of the built environment today will still exist in 2050. Currently, building renovations affect only 0.5–1 percent of the building stock annually.<sup>1</sup> A significant increase in renovations to existing buildings is required to meet the emission-reduction targets of the Paris Agreement.

This November 1 to 12, the Conference of the Parties to the UN Climate Change Conference (UNFCCC COP 26) will convene in Glasgow, UK. Funding for renovating the world's existing building inventories and operating toward net-zero carbon will figure prominently in the conference. The Art of Building Sustainability can help to meet net-zero carbon objectives. Your knowledge of building automation systems and the Art of Building Sustainability can help empower building operators to stand at the helm of sustainability.

Let's examine the nine elements of the Art of Building Sustainability in more detail throughout the year.

<sup>1</sup> Architecture 2030. "Why the Building Sector?" [https://architecture2030.org/buildings\\_problem\\_why](https://architecture2030.org/buildings_problem_why)

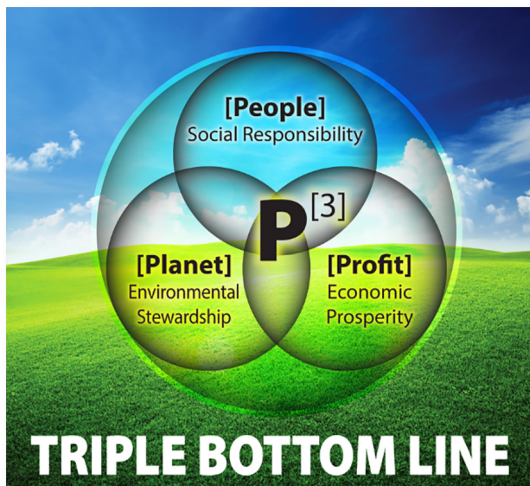
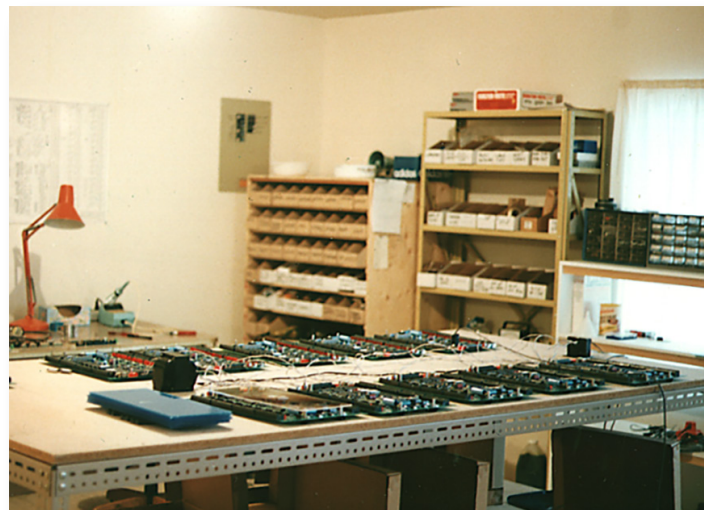


### ENOCEAN TECHNOLOGY: SMART, SUSTAINABLE, AND WIRELESS

Since the thermostat was invented, finding a way to control complete building systems was a popular goal. Early whole building systems relied on piping and tubing to deliver compressed air throughout a facility to control devices or react to changes in conditions.

This practice largely continued until the 1980s, when the advancement of computers, digital communication, and direct-digital systems emerged. These systems relied on wiring and low-voltage signals read from sensors and sent to control devices that required a physical connection. They read changes in sensor signals and sent control signals to building operating systems, including heating, ventilation, and air-conditioning systems.

The digital age ushered in direct-digital control. The ability to network controllers closer to the equipment and to read and share information changed the game. Facility directors could action work orders quickly and efficiently. Building automation strategies became more focused on energy costs (profit), occupant satisfaction (people), and environmental concerns (planet)—the triple bottom line, as coined by John Elkington in 1994 (*The Economist* 2009). Direct-digital control meant more information and interaction was necessary to achieve these goals and work toward building sustainability.



This shift in the industry allowed users to gather information from building automation systems and gave application engineers the ability to tune a building for energy savings based on the gathered data. Building automation systems are more connected today than ever before, which enables information sharing and interaction with everyday items we never imagined we would think about.

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Do you know when your lobby bathroom was last cleaned? How many desks are occupied in your building on average at 2 PM on a Friday? Are too many people in your open-office area to maintain safe conditions during a global pandemic? All these data points can be measured and actioned on. Doing so with a wired sensor solution would be hard to maintain, not very flexible for the tenant or building owner, and costly to install.



EnOcean Alliance, an open, non-profit organization, was founded in 2008. EnOcean Alliance is committed to enabling and promoting interoperable ecosystems for smart homes, smart buildings, and smart spaces based on the maintenance-free radio standard ISO/IEC 14543—3-10/11 (EnOcean Alliance 2020). In 2010 we began testing EnOcean wireless technology at Reliable Controls and introduced our first wireless products, the SMART-Sensor™ EnOcean Accesspoint and SPACE-Sensor™ EnOcean, in March 2011. These devices, when joined with any Reliable Controls device that supports SMART-Net™, allow a dealer to put temperature and input devices in areas not previously accessible. In October 2018 we complemented these devices with the addition of the EnOcean Transceiver supported by the MACH-ProLight™.

Consider a classroom that is hard to control with a single sensor close to the entry door. With the introduction of a SMART-Sensor EnOcean Accesspoint wired to a MACH-ProAir and several SPACE-Sensor EnOcean devices in the room, you can collect multiple temperature readings to provide average temperatures throughout the day. Similarly, you could add an EnOcean Transceiver to a MACH-ProLight controller to control lighting and HVAC in an office. You could wirelessly monitor light levels with an easily relocated wireless EnOcean light-level sensor and provide temperature adjustment and readings with a SPACE-Sensor EnOcean device with setpoint slider.

Reliable Controls EnOcean devices support both 902 MHz (for North American applications) and 868 MHz (for applications in Europe or China) radio frequencies. In December 2019 we announced a partnership with Ad Hoc Electronics, manufacturer of Illumra controls. You can order our EnOcean devices and a variety of Illumra wireless products through eBusiness (Figure 1).



Figure 1: EnOcean devices available through eBusiness.



EnOcean sensors and switches often operate by harvesting energy from their surroundings—for example, from motion, light, or temperature changes. They broadcast standardized communication profiles (EnOcean Equipment Profiles, or EEPs) to a receiving transceiver or each other, operating on the EnOcean wireless standard. The EnOcean wireless standard (ISO/IEC 14543.3.1X) operates in sub-1GHz radio bands and is optimized for use in buildings with a possible range up to 30 meters (EnOcean Alliance 2020). Adding EnOcean devices that are repeaters to strategic locations in a space ensures good communication and a successful deployment. EnOcean-certified devices provide a standardized communication solution and allow you to incorporate many different devices into an overall design.

To support EnOcean solutions for the Authorized Dealer network, we have tested and documented many different devices. You can find information about these tested devices in the eForum under **Application Support > Wireless Communication** (Figure 2).

The screenshot shows the eForum interface for the 'App Engineering' group. The forum is titled 'EnOcean Devices, Quick Reference' and lists various tested devices under four categories: Sensors, Relays, Dimmers/Controllers, and Switches. Each device entry includes a brief description and a link to the product page.

**Sensors**

- Temperature sensor with battery backup; Reliable Controls: [SS3F-902-B](#)
- Temperature sensor with setpoint slider; Reliable Controls: [SS3F-902-S](#)
- Temperature sensor, battery backup, and override button; Reliable Controls: [SS3F-902-B-O](#)
- Temperature sensor, battery backup, override button, and Setpoint Slider; Reliable Controls: [SS3F-902-B-O-S](#)
- Wireless, battery-free, light level sensor; Illumra: [F9T-LLS](#)
- Door/window sensor; Illumra: [F9T-MDCCP](#)
- Door/window sensor with battery; Illumra: [F9T-DWS](#)
- Occupancy sensor, wall mounted; EnOcean/EasyFit: [FOSWU-W-FO](#)
- Occupancy sensor, ceiling mounted; EnOcean/EasyFit: [FOSCU-W-FO](#)
- Door/window sensor; EnOcean/EasyFit: [FDWSU-W-FO](#)
- Door/window sensor; Functional Devices: [WDWS-FN3](#)
- CO<sub>2</sub>, temperature and humidity sensor; Airtest: [TR9277-FO](#)
- IP65 rated air temperature and humidity sensor; Thermokon: [SR65\\_rH](#)

**RELAYS**

- 5 A Relay with repeater; Illumra: [F9X-RUV-3HOTP](#)
- 20 A Relay with repeater; Illumra: [F9X-RUV-4IBTP](#)
- 5 A Relay, dimmer, and repeater; Illumra: [F9X-DUV-10VTP-FX](#)
- 20 A Relay, dimmer, and repeater; Illumra: [F9X-DUV-10VTP](#)
- Wireless control relay with input and repeater; Functional Devices: [RIBW01B-FN3](#)

**DIMMERS/CONTROLLERS**

- 5 A Relay, dimmer, and repeater; Illumra: [F9X-DUV-10VTP-FX](#)
- 20 A Relay, dimmer, and repeater; Illumra: [F9X-DUV-10VTP](#)
- Constant voltage PWM dimmer and repeater; Illumra: [F9X-D02FL](#)

**SWITCHES**

- Handheld wireless dual switch; Illumra: [F9T-S2HBK](#)
- Single rocker switch; Illumra: [F9T-S1AWH](#)
- Key card reader; Illumra: [F9T-C2AWH](#)

Figure 2: List of tested EnOcean devices on the Reliable Controls eForum.



Consider some recently completed projects. Did you miss opportunities for additional sales and added customer value by not deploying an EnOcean solution? Installing an EnOcean network of under-desk motion sensors could allow you to provide additional occupancy information, collect data for dashboards, and generate notifications to occupants when a room is at safe capacity during the pandemic. Knowing that only 50 percent of a space is used or that a section of a room is not used at all may allow a company to schedule cleaning more appropriately. Incorporating EnOcean CO<sub>2</sub> sensors in an open office could allow for better ventilation control and energy savings.

Case studies, solutions, and marketing ideas for EnOcean wireless solutions are available from our partner [Illumra](#) and from the [EnOcean Alliance](#) to help application engineers decide what solutions to offer customers.

Endless EnOcean wireless opportunities are available. What ideas can you think of?

If you have implemented an EnOcean solution or have questions, we would love to hear from you. Please reach out to [aengineering@reliablecontrols.com](mailto:aengineering@reliablecontrols.com).

EnOcean Alliance. (December 2020). *About EnOcean Alliance*. <https://www.enocean-alliance.org/about-us>.

*The Economist*. "Triple Bottom Line." November 17, 2009, <https://www.economist.com/news/2009/11/17/triple-bottom-line>.



**enocean® alliance**

*People and technology  
you can rely on™*



# THE Resource



TO ENSURE THE HIGHEST LEVEL OF SUPPORT,  
PLEASE CONTACT US AT...

[helpdesk@reliablecontrols.com](mailto:helpdesk@reliablecontrols.com)

*helpdesk* is the best way to email the Technical Support team when you are experiencing technical difficulties with Reliable Controls system hardware or software.

[aengineering@reliablecontrols.com](mailto:aengineering@reliablecontrols.com)

*aengineering* is the ideal way to contact the Application Engineering team for support with system design, specification compliance, solution development, Control-BASIC, and third-party integration.

**If you need help, remember...  
we've got your back.**

RELIABLE CONTROLS eFORUM

**37 | 148 | 49,846**

BRANDS | POSTS | VIEWS and DOWNLOADS

A moment in the eForum could save you hours of troubleshooting.

[reliablecontrols.com/support/forum](http://reliablecontrols.com/support/forum)



*People and technology  
you can rely on™*



## Did you know?

### BACnet Virtual Private Network connections in RC-Toolkit are now called BACnet Secure Network connections.

We introduced a new term with the release of RC-RemoteAccess 3.5.1 in October: *BACnet Secure Network*, or B/SN. B/SN replaces BACnet Virtual Private Network (B/VPN) as a blanket term to describe a secure network hosted by RC-RemoteAccess.

This is just a name change in RC-Toolkit for now: different name, all else the same. The connection to RC-RemoteAccess is unchanged and opens normally. You don't need to take action. The configuration dialog boxes are the same except for the name change; for example, the B/VPN Setup dialog box is now called the B/SN Setup dialog box.

We made this change because we will eventually support multiple secure protocol connections using RC-RemoteAccess, including BACnet Secure Connect (BACnet/SC) connections. You will still be able to select B/VPN as a protocol option, but RC-RemoteAccess will configure client connections with a generic B/SN.

We plan to implement this change in all Reliable Controls client software—RC-Studio®, RC-WebView, RC-Archive®, and RC-Toolkit—in 2021. First up is RC-Toolkit, with the release of version 3.2.1.

Before you install RC-Toolkit 3.2.1, your Systems List looks like the one shown in the top part of Figure 1. Note that B/VPN is the protocol shown for RC-RemoteAccess connections.

Modem Baud	Protocol	BACnet Device ID
38400	BACnet	100000
38400	BACnet	1000
38400	Dual	2000
38400	B/VPN	1000
38400	BACnet	1
38400	BACnet	Auto
38400	B/VPN	14000
38400	B/VPN	1000

B/VPN -> B/SN

Modem Baud	Protocol	BACnet Device ID
38400	BACnet	100000
38400	BACnet	1000
38400	Dual	2000
38400	B/SN	1000
38400	BACnet	1
38400	BACnet	Auto
38400	B/SN	14000
38400	B/SN	1000

Figure 1: Protocol column in the Systems List in RC-Toolkit 3.2 (top) and 3.2.1 (bottom).



Once you have installed RC-Toolkit 3.2.1, your Systems List will look like the one shown in the bottom of Figure 1—seen in full in Figure 2. Instead of B/VPN, you will now see B/SN as the protocol shown for RC-RemoteAccess connections.

	System Name	Label	Job Directory	Destination	Modem Baud	Protocol	BACnet Device ID	Port
				192.168.1.200	38400	BACnet	100000	47800
1	NormaBIP	Normanet	c:\RC-Studio\Normanet	192.168.168.102	38400	BACnet	1000	47800
2	Normanet	Clarke	C:\RC-Studio\Clarke	192.168.168.102	38400	Dual	2000	47800
3	normbvpn	normabvp	C:\RC-Studio\normabvp	norma	38400	B/SN	1000	8443
4	mpa	mpa	C:\RC-Studio		38400	BACnet	1	47800
5	sim	sim	C:\RC-Studio\sim		38400	BACnet	Auto	47800
6	MarkF-work	markf	c:\RC-Studio\markf	fiddlefingers.net	38400	B/SN	14000	8443
7	MSD-Beta	msd	c:\RC-Studio\msd	192.168.2.132	38400	B/SN	1000	8443
8	MattC	mattc	c:\RC-Studio\mattc	192.168.2.119	38400	B/SN	179000	8443
9	bpvn2	bpvn2	c:\RC-Studio\bpvn2	norma	38400	B/SN	2000	8443
10	labbox	labbox	c:\RC-Studio\labbox	labbox	38400	B/SN	2000	8443

Figure 2: Systems List in RC-Toolkit 3.2.1.

To create a new RC-RemoteAccess secure connection in RC-Toolkit 3.2.1, select **B/SN** in the Protocol column of the Systems List. You no longer have the option to select B/VPN for client connections in RC-Toolkit.



## WEBSITE UPDATES

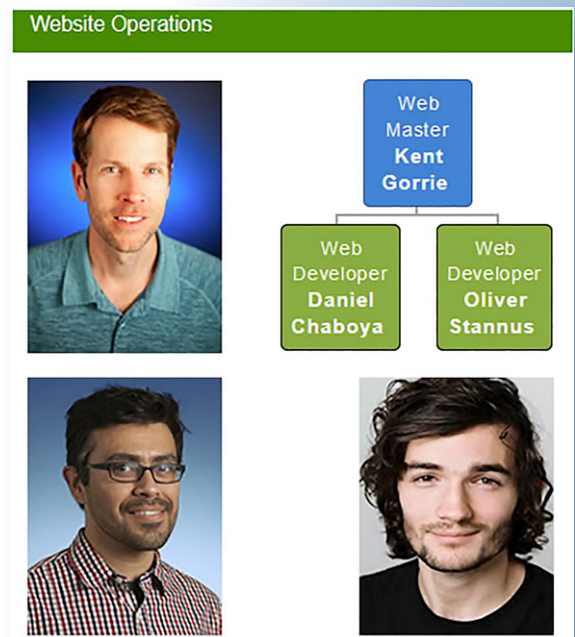
Our Web Development team works hard to enhance the Reliable Controls website user experience and regularly engineers new features for the Authorized Dealer network.

We recently welcomed a new web developer to the team: Oliver Stannus (Figure 1). Oliver brings a range of skills that will assist you as a dealer and help us develop exciting new features and functionality.

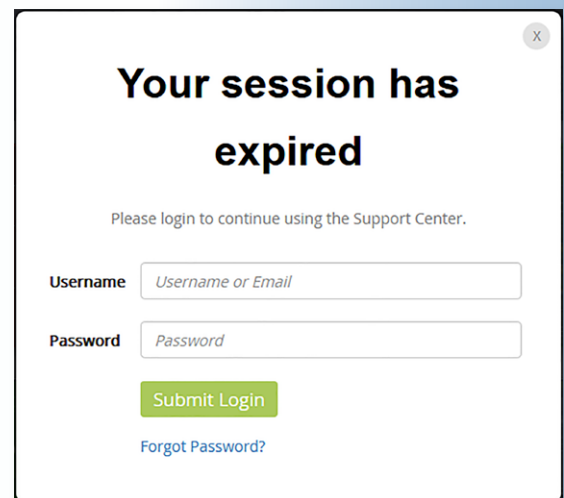
In the first quarter of 2021, we implemented several notable updates:

1. Support Center logon expiration: If you are logged on to the Support Center but have been inactive for about 18 hours, your session will expire (Figure 2). This safety feature ensures a reduced risk of unauthorized access.

*Figure 2: Support Center displays an expired session message after 18 hours of inactivity.*



*Figure 1: Web Development team—web master Kent Gorrie and web developers Daniel Chaboya and Oliver Stannus.*





- RC-RemoteAccess temporary licenses: You can now generate temporary RC-RemoteAccess licenses that allow customers to explore the benefits of the software. Navigate to **Software > License Report** in the Dealer Support Center, select your customer and software, and choose an unlock code to select a serial number (Figure 3).

Unlock Codes						
Serial	Customer	Purchased	Clients	Subscription Expires	License File	Temp License
RC-RA3-01038	Jonathan Smith	Aug 30, 2016	100	Jan 31, 2018	<a href="#">Download</a>	<a href="#">Generate</a>

Date	Name	Workstation	Site	Return
Aug 30, 2016	Jonathan Smith	Tech Support	Reliable Controls	<a href="#">✕</a>

Figure 3: Choose an unlock code to select a serial number for the temporary RC-RemoteAccess license.

- Peripheral partners events page: We have set up a new events page on the Dealer Support Center that allows peripheral partners to post upcoming events and makes them accessible to Reliable Controls users. We hope this will strengthen our partner relationships and draw traffic to their events.

To access the partner events page, navigate to **Training > External Resources > Peripheral Partners** in the Dealer Support Center (Figure 4).

Figure 4: Peripheral partners events page in the Dealer Support Center.





4. Press release links on Corporate History page: Where applicable, our [Corporate History page](#) now includes links to Reliable Controls press releases (Figure 5).

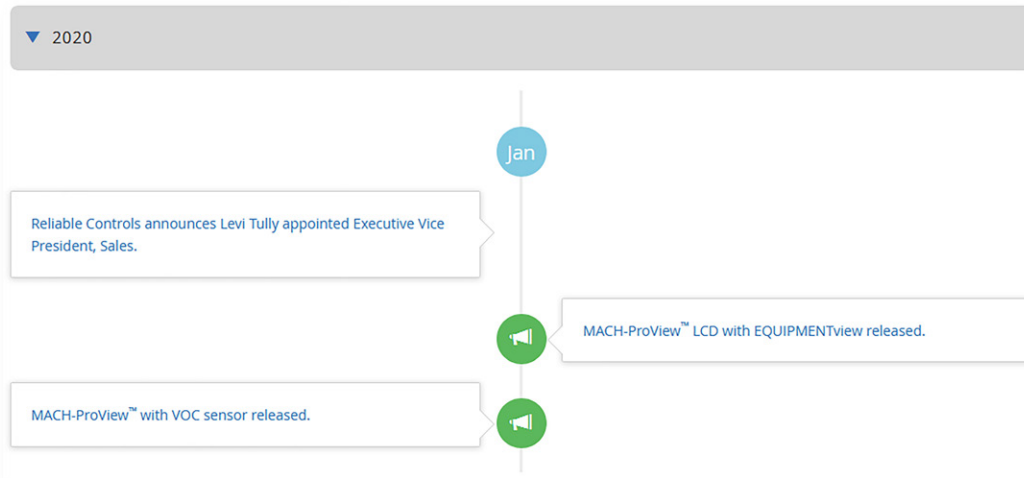


Figure 5: The time line on our Corporate History page now includes press releases.

5. Improved mobile experience: Software pages now include a branded splash screen and automatically embedded videos when viewed on a mobile device (Figure 6).

Figure 6: Improved mobile experience.



Better by design™

Recognized as the ultimate all-in-one engineering tool, RC-Studio® from Reliable Controls provides a multivendor, multiprotocol integration solution for database, alarming, scheduling, trending, and sequence of operation programming. This easy-to-use, easy-to-learn BACnet Advanced Workstation (B-AWS) allows you to develop a complete and customized graphical user interface for monitoring and controlling any application at any scale. The real-time energy management and integrated fault detection and diagnostic capabilities in RC-Studio will empower you to improve your facility's operational efficiency and occupant comfort while maintaining your sustainability goals.

Purchase Products



## TRAINING

As part of our commitment to having the most satisfied customers in the industry, we offer a range of training options and formats to help you derive maximum potential from your Reliable Controls system. All in-class training is paused until it is safe to travel and hold group training sessions. In the meantime, our distance-learning classes are broadcast live to students worldwide. We regularly add new courses, so please visit the [Reliable Controls Learning Center](#) to see the current schedule in your local time.

### Training for technicians

**Reliable Controls Authorized Dealer (RCAD)** certification must be completed by at least one individual in every Authorized Dealer office. Students work with the latest Reliable Controls hardware, firmware, and software to learn installation techniques and program a typical air-handling unit. Register now for distance RCAD certification training.

- March 15–19 and March 22–26, 15:00-19:00 UTC **\*\*FULL\*\***
- April 12–16 and April 19–23, 13:00-17:00 UTC
- May 2–6 and May 9–14, 00:00-04:00 UTC
- June 7–11 and June 14–18, 14:00-18:00 UTC
- July 12–16 and July 19–23, 15:00-07:00 UTC
- August 8–12 and August 15–19, 22:00-02:00 UTC
- September 13–17 and September 20–24, 13:00-17:00 UTC
- October 18–22 and October 25–29, 15:00-19:00 UTC
- November 7–11 and November 14–18, 00:00-05:00 UTC
- December 6–10 and November 13–17, 14:00-18:00 UTC

### Advanced training for level 3 technicians

In our advanced classes, students with level 3 technical certification learn to leverage the Reliable Controls system to improve building performance, reduce energy consumption, and simplify maintenance. Please check the [Learning Center](#) for current course offerings.

**Integrated Fault Detection and Diagnostics:** Advanced technicians explore how the real-time integrated fault detection and diagnostics capabilities in RC-Studio improve operational efficiency and occupant comfort. Students build intuitive, flexible interfaces using RC-GrafXSet animations and develop strategies for detecting mechanical faults and control errors that affect building performance. (8 hours)

We add classes to the schedule regularly. Please check the [Learning Center](#) for upcoming dates and times.



## WORLD GREEN BUILDING COUNCIL ANNUAL REPORT 2020

The World Green Building Council (WorldGBC) recently issued an annual report to outline its achievements in 2019/2020. The WorldGBC global action network now comprises 70 green building councils, 1,000 employees, and over 36,000 members who contribute to greener buildings around the world. Reliable Controls is a proud member of both the Canada and U.S. Green Building Councils.

Last year marked the beginning of “the Decade of Climate Action,” says WorldGBC CEO Cristina Gamboa in the foreword. She also notes that COVID-19 brought into stark focus the interface between the built environment and people’s well-being.

Notable achievements in this year’s report include:

- The launch of the WorldGBC’s new strategy: *Sustainable Buildings for Everyone, Everywhere*
- Reflection on the most successful Green Building Week ever, with more than 300 events across 40 countries
- A new Health & Wellbeing Framework project as part of the WorldGBC’s Better Places for People initiative
- Recognition that through a partnership with BBC Storyworks, the film series Building a Better Future reached over a million people in its first 3 days
- Appreciation for the nine organizations that helped the Council advocate for a Built Environment Day at the next UN Climate Change Conference



*WorldGBC Annual Report 2020.*

Read the full report and explore the state of the market for sustainable buildings, progress over the past decade, and how we can accelerate the uptake of net-zero buildings and enable resource efficiency and circularity in the built environment:

[https://worldgbc.org/sites/default/files/WorldGBC%20Annual%20Report%202020\\_1.pdf](https://worldgbc.org/sites/default/files/WorldGBC%20Annual%20Report%202020_1.pdf)





## ASHRAE EPIDEMIC TASK FORCE BUILDING READINESS GUIDE

The ASHRAE Epidemic Task Force recently updated its building readiness guide, which provides practical information and checklists for how buildings should be operating.

**ASHRAE's building readiness guide identifies building automation systems as a critical component of its Epidemic Conditions in Place recommendations, which include:**



- Evaluating and understanding building automation systems and their performance in each facility
- Providing properly secured remote access with tools like RC-RemoteAccess
- Reviewing credentials, alarms, and logs
- Evaluating building automation and mechanical system performance
- Commissioning and retroactive commissioning
- Increasing ventilation and pressurization
- Implementing flush strategies, including monitoring CO<sub>2</sub> and VOCs
- Calculating, controlling, and monitoring outdoor air
- Modifying energy-recovery ventilator operation
- Temporarily closing a facility
- Properly opening a facility

This guidance provides a compelling and timely opportunity for you to engage with your customers and support them during COVID-19. To learn more, please visit:

<https://ashrae.org/file%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf>



## RC-GRAFSET RECOMMENDATIONS FOR DESIGNING AND LAYING OUT DASHBOARDS

**RCGrafSet**<sup>®</sup>  
Graphical Images & Services  
Software

### *User interface*

We released RC-GrafSet 3.5 in October 2020, with new features—like HMI Console templates, an updated software manual, and the RC-GrafSet Flash Utility—highlighted in bulletins and previous issues of the *Resource*.

A dashboard conveys information about data or the status of components; it can expose interactive elements to users, allowing them to alter the current state of a component or interact with information to find out greater details. It has much in common with most types of user interface (UI).

For some people, laying out information in a pleasing way is easy; for others it's more challenging. Even for people with skills in this area, changes in aesthetics over time can be frustrating.

A UI is anything a user may interact with to use a digital product. An easy-to-use UI—which is the ideal—is one in which the layout, elements, and language employed are intuitive and require little thought to understand and use.

The layout is how content is grouped and ranked to make sense of potentially varied blocks of information.

### *User experience*

User experience is, at its simplest, what the individual interacting with the product or service takes away from using a product. It is often closely linked with research to understand the user—who they are, what their needs are, and how and why they use the product. Some simple questions to consider are:

- Where would someone use this product?
- How would they use it?
- What would prompt them to use it?



If you are unable to do formal research, informal discussion can help. At the least, place yourself in the user's "shoes" to understand how these questions can assist in your design decisions.

## Elements of design

Design, like most things, has certain elements to which you can apply general rules.



## Size

A size hierarchy can assist the user to make decisions or find important information speedily. Rank elements by size; the most important and the most likely choices should be larger than less-important elements (Figure 1).

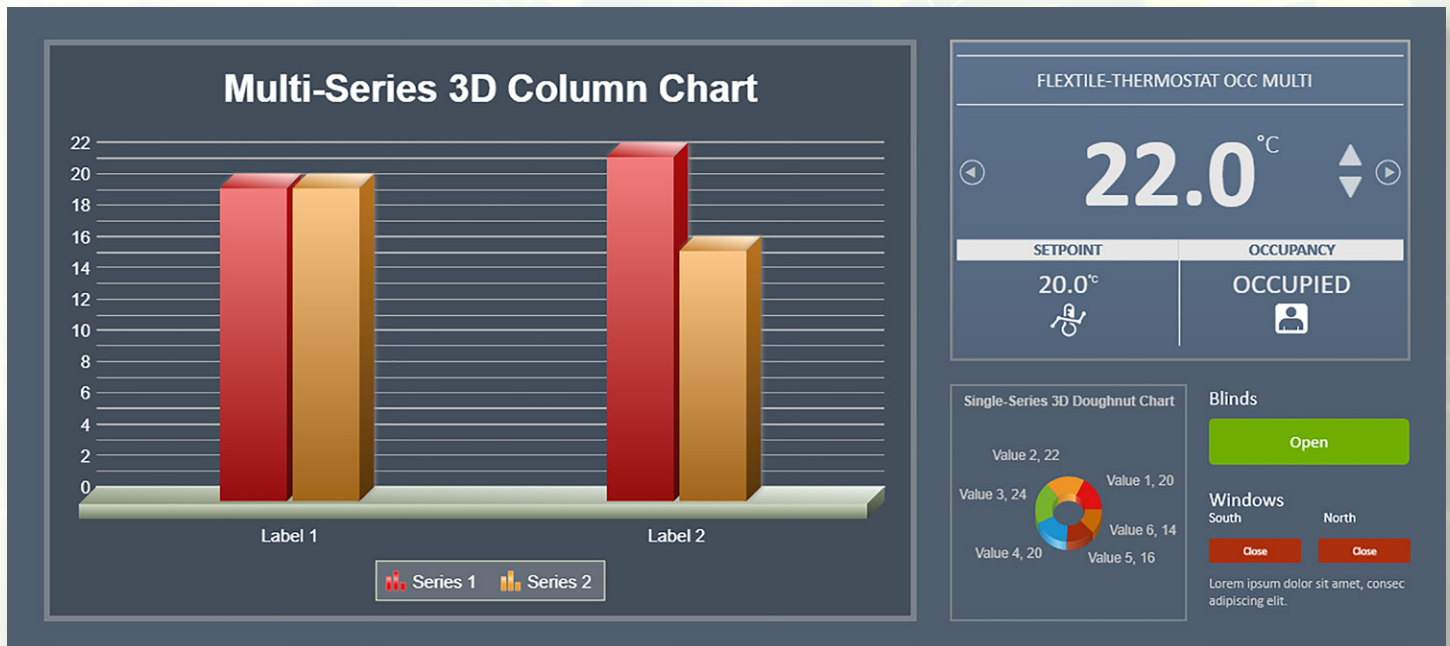
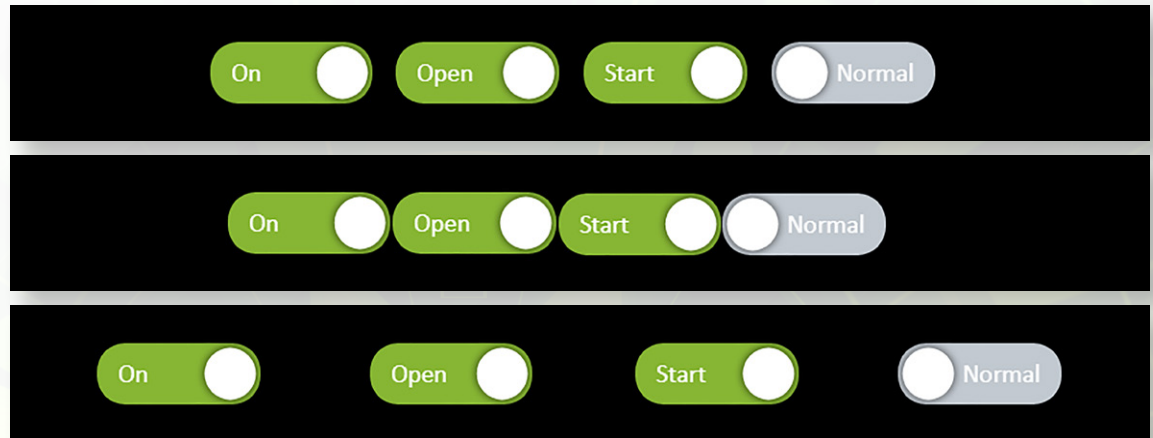


Figure 1: Larger elements, such as the largest table above, and large font sizes draw the eyes to key spots. Color also draws attention, even to smaller areas like the red buttons.

Use typography to create hierarchy and clarity. Different font sizes (three at the very most!) and arrangement of text increase legibility and the user's ability to scan.

## Space

Well-applied spacing helps the user focus on content, reducing distractions and improving their ability to scan. Too little space can make interactions problematic on smaller screens; too much space can be distracting visually and impede the physical movement ideal for performing numerous interactions (Figure 2).



*Figure 2: In the second row, the buttons are too close together, and on small screens this could result in a user pressing the wrong one. In the bottom row, the spacing is too large, so the user may have to move more to switch each one, which can be annoying.*

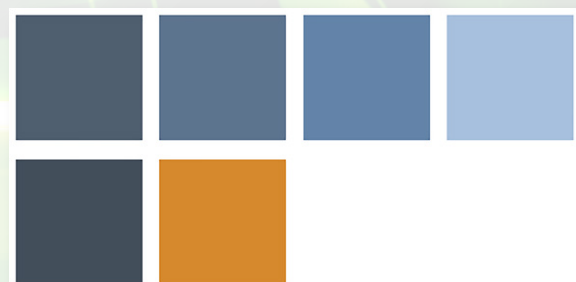
Keep clutter to a minimum, and keep the interface simple by avoiding unnecessary information.

## Color

Use color to create areas that draw attention and quickly convey a status without the need for text. You can also use color to create harmony—connections between areas—as well as contrast, which is important for calling attention.

A useful approach to color is to select the main color, then select darker and lighter tones of that color plus a contrasting color or two (Figure 3). Again, keep colors to a minimum for clarity.

*Figure 3: To create a color palette, start with a color on which text is easily legible. Create lighter and darker tones of that color to use for variance, such as in headings and borders, and have one or two contrasting colors you can use minimally to call attention to specific areas.*



## Balance

Symmetrical layouts are pleasing to the eyes but can become static simply due to their balanced nature. Asymmetrical layouts add movement but need to be carefully considered so they do not appear lopsided (Figure 4).

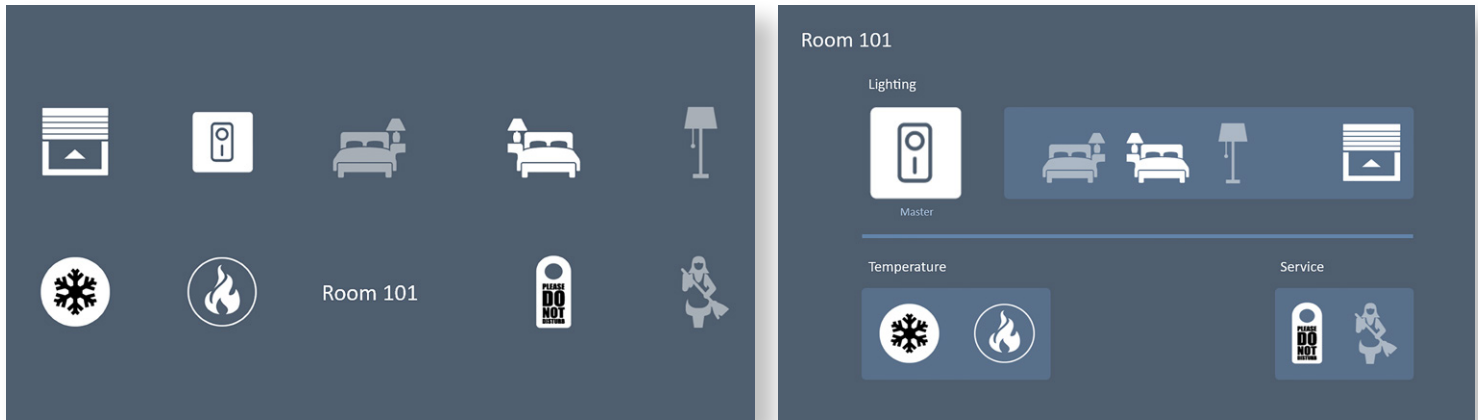
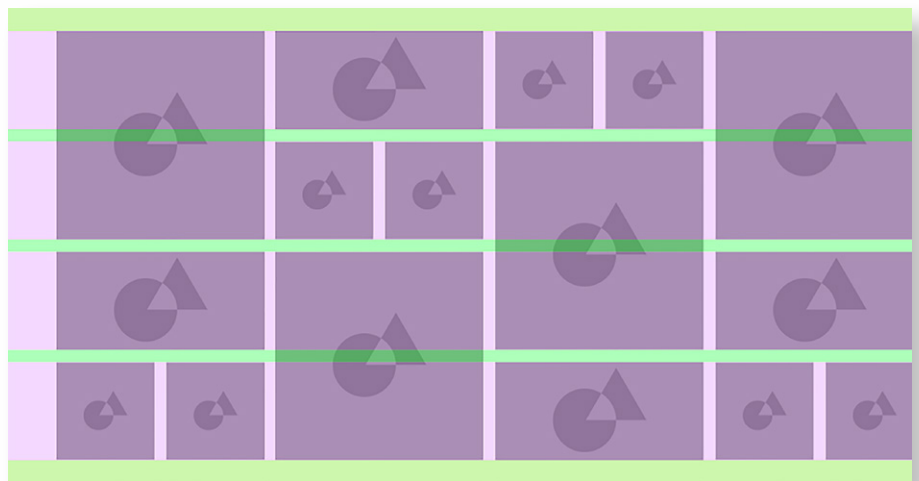


Figure 4: (Left) Symmetrical layouts are clean and allow users to focus on each element, but they can also be boring. (Right) A mix of symmetry and asymmetry can clarify sections and maintain interest, and adding small design elements can further enhance the user's ability to read elements as unified information with separate parts.

Grids are also pleasing to the eyes, creating a proportional, consistent distribution of elements in a layout (Figure 5).

Figure 5: A grid, created in Adobe Photoshop for example, can be used to create columns with equal spacing that inform the layout of elements on them. You could use a grid as a temporary System Group or EQUIPMENTview background to make it easy to place and size elements.





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### Consistency

A UI design should work as a whole and needs to be consistent in use of fonts, sizes, and colors. The elements should also be consistent in terms of style. Keep to similar-looking elements; for example, all icons should look like they belong to the same family. The sections we use in RC-GrafXSet are meant to help you with this.

We hope this simple overview to some design considerations will help you create layouts. Please let us know if you would like more information about UI design.



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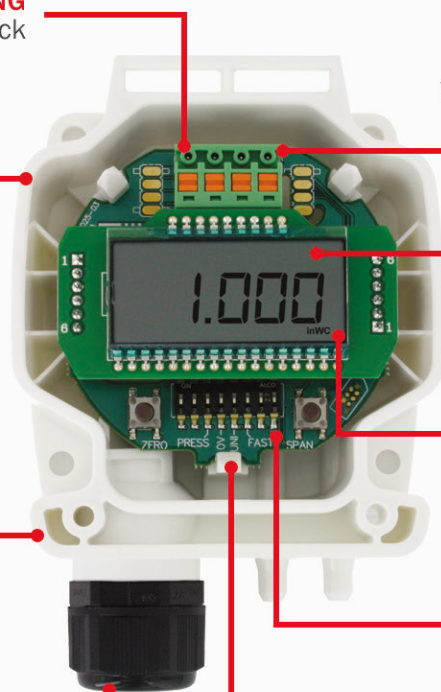
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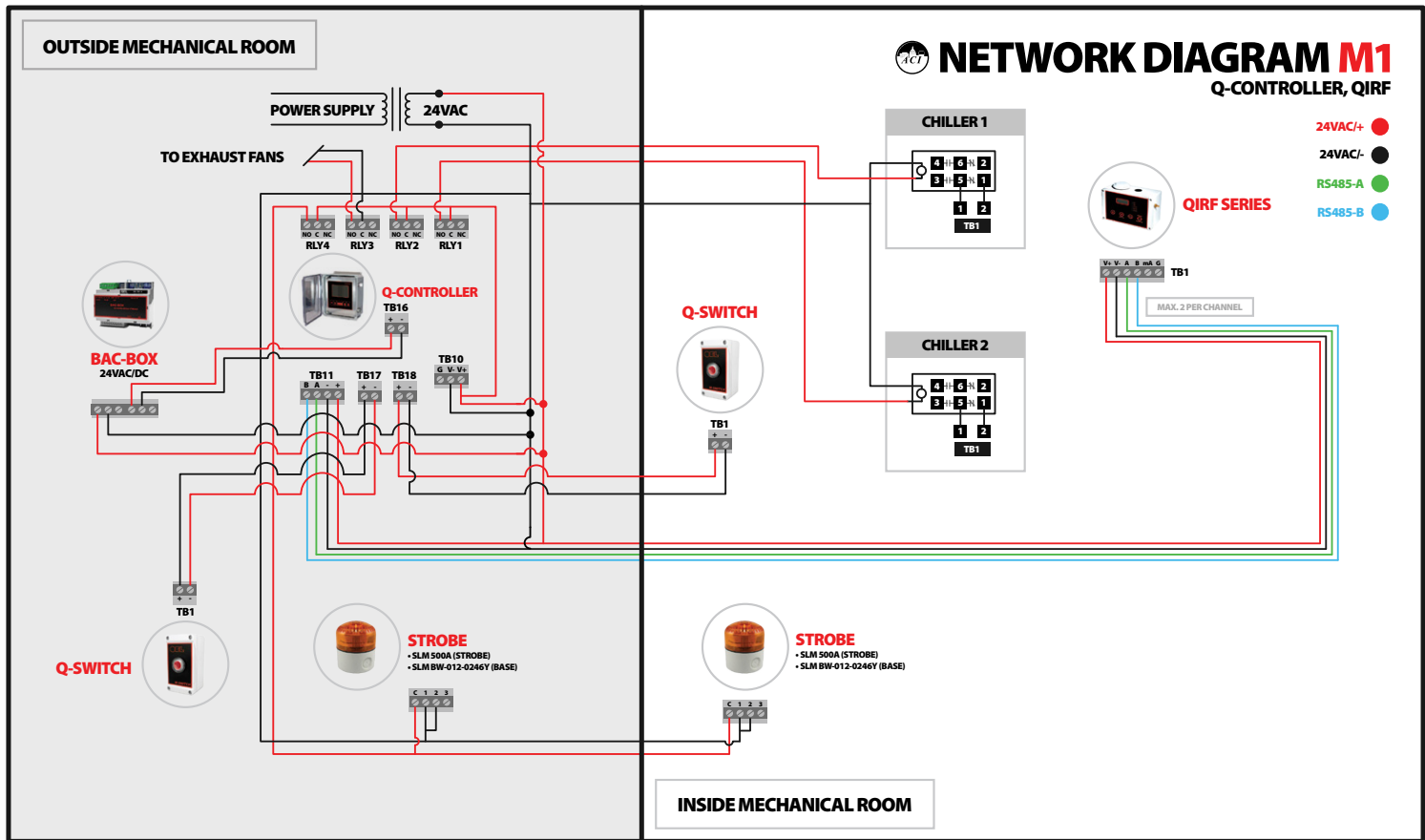
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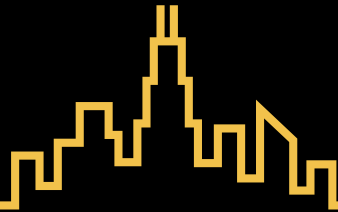
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